

**What Is Claimed Is:**

1. An inter-packet gap configuration module for determining, as a packet is transmitted, a suitable inter-packet gap to be applied after the packet,  
5 comprising:  
addition means for adding a partial measure of the size of a packet and a previous measure to produce a new measure;  
signal means for generating a signal if said new measure equals or exceeds a threshold; and  
10 storage means for storing said new measure.
2. The inter-packet gap configuration module of claim 1, further comprising:  
counting means configured to track the sum of said signals generated by  
15 said signal means before transmission of the packet is completed.
3. The inter-packet gap configuration module of claim 2, wherein the size of the inter-packet gap to be applied after the packet is directly proportional to said sum.  
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4. The inter-packet gap configuration module of claim 2, wherein the size, in bytes, of the inter-packet gap to be applied after the packet is equal to said sum.
- 25 5. The inter-packet gap configuration module of claim 2, wherein the size, in bytes, of the inter-packet gap to be applied after the packet is equal to said sum plus a default value.

6. The inter-packet gap configuration module of claim 2, wherein said sum is provided to an inter-packet countdown timer configured to insert a number of inter-packet gap elements, after the packet, greater than or equal to said sum.

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7. The inter-packet gap configuration module of claim 1, further comprising:

comparison means for comparing said new measure with said threshold.

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8. The inter-packet gap configuration module of claim 1, further comprising:

subtraction means for subtracting said threshold from said new measure if said new measure exceeds said threshold.

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9. The inter-packet gap configuration module of claim 8, wherein said subtraction means comprises one or more of:

said signal means; and

a comparison means for comparing said new measure with said threshold.

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10. The inter-packet gap configuration module of claim 1, wherein said storage means provides said stored new measure as said previous measure to said addition means when a subsequent partial measure of a packet is received at said addition means.

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11. The inter-packet gap configuration module of claim 1, wherein said threshold is programmable.

12. A programmable inter-packet gap (IPG) configuration module for calculating a number of inter-packet gap elements to apply after a packet, comprising:

- an adder configured to generate a new count of packet units by adding:
  - 5 a previous count of packet units; and
  - an additional count of packet units;
- a comparator configured to compare said new count to a threshold;
- a signaller configured to generate an IPG extension signal if said new count is greater than said threshold;
- 10 a subtractor configured to subtract said threshold from said new count if said new count is greater than said threshold; and
- a storage element configured to store said new count.

13. The programmable inter-packet gap (IPG) configuration module of claim 12, further comprising:

- a counter configured to calculate the sum of said IPG extension signals generated by said signaller;
- wherein a number of IPG elements to be interposed between the packet and a subsequent packet is derived from said sum.

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14. The programmable inter-packet gap (IPG) configuration module of claim 13, wherein said sum is forwarded to an IPG timer configured to enable transmission of said subsequent packet after said number of IPG elements are applied.

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15. The programmable inter-packet gap (IPG) configuration module of claim 12, wherein said storage element is further configured to provide said stored

new count to said adder as said previous count of packet units for addition to a next additional count of packet units.

16. The programmable inter-packet gap (IPG) configuration module of  
5 claim 12, wherein said comparator comprises said subtractor.

17. The programmable inter-packet gap (IPG) configuration module of  
claim 12, wherein said comparator comprises said signaller.

10 18. The programmable inter-packet gap (IPG) configuration module of  
claim 12, wherein said IPG elements and said packet units are measured in bytes.

19. An apparatus for calculating an inter-packet gap extension based  
on a size of a packet, comprising:

15 an adder configured to add a current byte count and an incremental byte  
count to produce a new byte count, wherein said incremental byte count comprises  
a number of bytes processed in a packet as the packet is transmitted;

a storage component configured to store said new byte count;

20 a comparator configured to generate an inter-packet gap extension signal if  
said new byte count exceeds a threshold; and

a counter configured to sum said inter-packet gap extension signals to  
determine an inter-packet gap extension.

20. The apparatus of claim 19, wherein said inter-packet gap extension  
25 is provided to an inter-packet gap generator configured to apply an inter-packet  
gap after transmission of the packet.

21. The apparatus of claim 20, wherein the inter-packet gap applied by the inter-packet gap generator is measured in bytes and is greater than or equal to said inter-packet gap extension.

5 22. The apparatus of claim 19, further comprising:  
a default inter-packet gap value;

wherein the sum of said inter-packet gap extension and said default inter-packet gap value is provided to an inter-packet gap generator configured to apply an inter-packet gap after transmission of the packet.

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23. The apparatus of claim 19, further comprising:  
a subtractor configured to decrease said new byte count by said threshold prior to storage of said new byte count in said storage element if said new byte count exceeds said threshold.

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24. The apparatus of claim 23, wherein said comparator comprises said subtractor.

25. The apparatus of claim 19, wherein said stored new byte count is  
20 received at said adder as said current byte count when a subsequent incremental byte count is received at said adder.

26. An inter-packet gap (IPG) extender, comprising:  
an adder module configured to add a current measure of a packet size and  
25 an incremental measure of the packet to produce an incremented measure;  
a comparison module configured to receive said incremented measure,  
comprising:

a comparator configured to issue an extension signal if said incremented measure is greater than a threshold value;

a subtractor configured to decrement said incremented measure by said threshold to produce a decremented measure; and

5 a first multiplexer configured to issue one of said incremented measure and said decremented measure as a new measure;

a first storage configured to store said new measure; and

an extension counter configured to receive said extension signal, comprising:

10 an adder configured to add a current IPG extension and an incremental IPG extension to produce an incremented IPG extension;

a second multiplexer configured to issue one of said current IPG extension and said incremented IPG extension as a new IPG extension;

and

15 a second storage configured to store said new IPG extension.

27. The IPG extender of claim 26, wherein said first storage is further configured to produce said stored new measure as said current measure.

20 28. The IPG extender of claim 26, wherein said second storage is further configured to produce said stored new IPG extension as said current IPG extension.

25 29. The IPG extender of claim 26, wherein said first multiplexer is configured to:

issue said incremented measure as said new measure if said incremented measure is not greater than said threshold value; and

issue said decremented measure as said new measure if said incremented measure is greater than said threshold value.

5        30.     The IPG extender of claim 26, wherein said first multiplexer is configured to:

issue said decremented measure as said new measure if said comparator issues said extension signal; and

issue said incremented measure as said new measure otherwise.

10        31.     The IPG extender of claim 26, wherein said second multiplexer is configured to:

issue said incremented IPG extension as said new IPG extension if said extension counter receives said extension signal; and

issue said current IPG extension as said new IPG extension otherwise.

15        32.     A method of configuring an inter-packet gap (IPG) to be applied after a packet, as the packet is transmitted, comprising:

(a)     receiving an incremental measure of a portion of the packet;

(b)     receiving a current measure;

20        (c)     calculating a new measure, said new measure comprising the sum of said incremental measure and said current measure;

(d)     determining whether said new measure exceeds a programmable threshold;

(e)     if said new measure exceeds said programmable threshold:

25        (e')    incrementing a count of the size of an IPG to follow the packet; and

(e'')    subtracting said programmable threshold from said new

measure;

(f) storing said new measure; and

(g) repeating (a) through (g), wherein said current measure comprises said stored new measure.

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33. The method of claim 32, further comprising:

receiving an end of packet signal for the packet; and

forwarding said count toward an IPG module configured to apply an IPG after the packet.

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34. The method of claim 33, further comprising combining said count with a default IPG to yield a total IPG to be applied by the IPG module.

35. The method of claim 33, further comprising resetting said count to

15 an initial value in response to said end of packet signal.

36. The method of claim 35, wherein said initial value is greater than zero.

37. The method of claim 33, further comprising dynamically

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modifying said programmable threshold.